IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION

Applicant(s):	Reinhard Klemm
Case:	2
Serial No.:	09/164,509
Filing Date:	September 30, 1998
Group:	2152
Examiner:	S. Willett

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231

Signature: Linda Shuster Date: December 24, 2002

Title: Method and Apparatus for Prefetching Internet Resources Based on Estimated Round Trip Time

SUPPLEMENTAL APPEAL BRIEF

Assistant Commissioner for Patents
Washington, D.C. 20231

BOX AF

Sir:

Applicants hereby reply to the non-final Office Action, mailed September 24, 2002. A request to reinstate the appeal is submitted herewith. Applicants' Appeal Brief in an Appeal of the final rejection of claims 1 through 25 in the above-identified patent application was submitted on July 24, 2002.

REAL PARTY IN INTEREST

A statement identifying the real party in interest is contained in Applicants' Appeal Brief.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences that will directly affect or be directly affected by or have a bearing on the decision in the present appeal.

STATUS OF CLAIMS

A statement identifying the status of the claims is contained in Applicants' Appeal Brief.

STATUS OF AMENDMENTS

A statement identifying the status of the amendments is contained in Applicants' Appeal Brief.

SUMMARY OF INVENTION

A Summary of the Invention is contained in Applicants' Appeal Brief.

ISSUES PRESENTED FOR REVIEW

A statement identifying the issues originally presented for review is contained in Applicants' Appeal Brief. In the final Office Action, the Examiner has supplemented his previous rejections to add a new rejection of claims 1, 4-8, 14-16, 20-22 and 25-29 under 35 U.S.C. §103(a) as being unpatentable over Aggarwal et al. (United States Patent No. 5,924,116) in view of Bryant et al. (United States Patent No. 6,078,956). In addition, the Examiner has supplemented his previous rejections to add Bryant et al. in combination with the previously cited references. Thus, the issues currently presented for review are:

i. Whether Claims 1, 4-8, 14-16, 20-22 and 25-29 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Aggarwal et al. (United States Patent No. 5,924,116) in view of Bryant et al. (United States Patent No. 6,078,956);

ii. Whether Claims 1, 4-8, 14-16, 20-22, 25-29 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Kunkel et al. (United States Patent Number 5,961,603) in view of Narayanaswami (United States Patent Number 6,182,113) and Bryant et al.; and

iii. Whether Claims 1 through 29 are properly rejected under 35 U.S.C. §103(a) as being unpatentable over Kunkel et al. in view of Vaid et al. (United States Patent Number 6,119,235) and Bryant et al..

GROUPING OF CLAIMS

A statement identifying the grouping of the claims is contained in Applicants' Appeal Brief.

CLAIMS APPEALED

A copy of the appealed claims is contained in an Appendix of Applicants' Appeal Brief.

ARGUMENT

Applicants' original arguments are contained in Applicants' Appeal Brief and are hereby incorporated by reference. In the final Office Action, the Examiner supplemented his previous rejections to add a new rejection of claims 1, 4-8, 14-16, 20-22 and 25-29 under 35 U.S.C. §103(a) as being unpatentable over Aggarwal et al. (United States Patent No. 5,924,116) in view of Bryant et al. In addition, the Examiner supplemented the previous rejections to add Bryant et al. in combination with the previously cited references.

In the final Office Action, the Examiner asserts that Aggarwal et al.teaches prefetching of Internet resources, dependent on round trip times based on send and receive times and data size (citing col. 2, lines 64-65 and col. 9, lines 50-61). The Examiner acknowledges that Aggarwal et al. does not disclose or suggest fetching data dependent on GET round trip times. The Examiner asserts, however, that Bryant teaches the measurement of response times for requests.

Aggarwal et al.

Aggarwal et al. disclose *caching* Internet resources, not *prefetching* resources. Aggarwal et al. teach that "[t]he cache can be implemented at various points on the network." Col.2, lines 64-65. More importantly, Aggarwal et al. teach that "[c]lient caches....may store either documents accessed during the current invocation (a

nonpersistent cache such as implemented by Mosaic), or documents accessed across invocations." Col. 3, lines 6-9. Thus, Aggarwal is directed to caching documents *only if they have been requested* and *only after they have been requested.* Prefetching requires fetching documents before they are requested and is not contemplated in Aggarwal. Each of the independent claims specifically recite "prefetching one or more Internet Resources."

The Examiner further asserts that "Aggarwal teaches fetching data dependent on round trip times based on send and receive times and data size". citing col. 9, lines 50-61.

There are three criteria to consider in the caching process of Aggarwal. The first criteria is when to fetch or retrieve the document. As previously indicated, Aggarwal fetches or retrieves resources only in response to a user request, not in anticipation of a future request. The second criteria is when to store the obtained resource in a cache. Aggarwal teaches that, in the prior art, caches are typically used to "reduce access latencies" by caching "*copies of popular documents or information* closer to the user." Col. 2, lines 60-64 (i.e., suggesting to cache documents at a location near the user). Aggarwal also teaches that "[t]he auxiliary stack can also serve as a dynamic "popularity list" such that an object may be admitted to the cache if and only if it appears on the popularity list." Col. 4, lines 21-24. More specifically, Aggarwal teaches that "[a] primary function of the admission control logic is to *allow only objects which are frequently accessed (popular enough) to enter the cache.*" Col. 10, lines 64-66. Thus, the prior art, including Aggarwal, utilize document popularity as a factor for selecting which documents to cache. This teaches away from the current invention which specifically does not give weight to the popularity of a document in making a selection decision.

The third criteria is when to remove or delete a resource from the cache. In this case, Aggarwal first teaches that, "[i]n order to choose candidates for replacement, only the least recently used objects in each group need to be considered." Col. 4, lines 34-36. Aggarwal then teaches that "the replacement selection logic is preferably a function of not only the size and the dynamic access frequency of the object, but also a function of the replacement cost. The replacement cost may be based on the access time required to obtain the object if it is not cached." Col. 7, lines 19-23. **Thus, Aggarwal utilizes round**

trip times only for selecting which data to replace in the cache. Aggarwal does not contemplate utilizing round trip times for the first and second criteria of selecting which data to fetch and/or store in the cache.

Aggarwal actually teaches away from the present invention. Aggarwal explicitly teaches that "[a]n approach which uses the access time for a previous access as an approximation for a current access will not work well in the presence of the caching hierarchy." Col. 9, lines 61-63. Thus, Aggarwal teaches away from using send and receive times for basing round trip times.

In addition, Aggarwal provides strong secondary evidence of non-obviousness. If it was obvious to a person of ordinary skill in the art at the time of the present invention to prefetch one or more Internet Resources based on round trip time, then such a suggestion would have been explicitly present in Aggarwal. Specifically, Aggarwal addresses the idea of fetching documents, albeit in response to actual user requests (and not a prediction of what the user may request in the near future, as in the present invention) and also the idea of removing documents from the cache based on round trip times. The fact that Aggarwal makes no suggestion to integrate these two issues in the manner suggested by the present invention, however, provides strong evidence of non-obviousness.

Bryant

The Examiner asserts that Bryant teaches the measurement of response times for requests. Bryant contradicts Aggarwal's teaching that "[a]n approach which uses the access time for a previous access as an approximation for a current access will not work well in the presence of the caching hierarchy."

Bryant teaches a "method of logging information in a computer network having a Web client connectable to a Web server. In response to the HTTP request (and as a result of receiving a response to that request), a response time associated with that first HTTP request is calculated. Thereafter, the response time calculated is passed from the Web client on a subsequent HTTP request to that Web server, where the information is logged for later use." See, Abstract.

More specifically, in the preferred embodiment of Bryant, the "routine continues at step 54 calculate the response time "x+y+z."... (which will usually be the

response time associated with the most-recent visit to the server), and formulates a response time protocol (RSP) cookie at step 60. At step 62, the cookie is then passed to the Web server, preferably within the new HTTP request itself. This completes the basic processing." Col.5, lines 32-46

Thus, Bryant does not suggest prefetching. In addition, Bryant does not teach how to estimate *future* response times to accomplish prefetching. Thus, Aggarwal or Bryant, alone or in combination, do not suggest prefetching Internet resources based on estimated round trip times.

The Examiner also states that "Bryant suggests that savings will result from implementing his downloading system. The motivation to incorporate limits on downloads insures that user data is readily available. Thus, it would have been obvious to one of ordinary skill in the art to incorporate the time limits as taught in Bryant into the prefetching system described in Aggarwal because Aggarwal operates with time constraints and Bryant suggests that optimization can be obtained when data limitations are respected."

Applicants have made a careful examination of Bryant and can find no reference to a downloading system or time limits. Applicants can also find no suggestion regarding optimization in Bryant.

Conclusion

The rejections of the claims under section §103 in view of Aggarwal, Bryant, Kunkel, Narayanaswami or Vaid, alone or in any combination, are therefore believed to be improper and should be withdrawn.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully submitted,

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